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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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FOREIGN WATERWAYS.

A recent report states that Germany has a total of 7,366 miles of waterways. The most important new canals which have been built, in course of construction, or, are now proposed, are: the Oder Spree Canal, which is completed; the Ems-Jade Canal, nearly finished; the Dortmund-Ems Canal, begun in 1891, and the Elbe-Trave Canal, the plans of which have been prepared, and the bill passed. The construction of this canal was authorized by the Prussian law of July 9, 1866, and the work was commenced in the summer of 1891; it is to be finished in 1896. The total cost was estimated at $15,712,380. The total length of the canal will be 148 miles. The Dortmund-Ems Canal forms the first section of a projected system of waterways, which is intended to connect the Rhine with the Ems, with the lower and middle Weser, and with the Elbe, thus affording, in connection with the existing canals between the Elbe, Oder, and Vistula, a complete line of water communication from east to west through the centre of the kingdom. There have actually been built in Germany, within the last 10 years, 60 miles of canals, at a total estimated cost of $3,061,800 (Oder-Spree); there are at present in course of construction 230 miles of canals, at a total estimated cost of $27,706,800 (Ems-Jade, 39 miles Dortmund-Ems, 148 miles; Elbe Trave, 43 miles.) There are also over 300 miles of canals projected (Dortmund-Rhine and Mittelland.)

BELLS REQUIRED BY THE WHITE LAW.

Acting Secretary of the Treasury Curtis has directed the supervising inspectors to instruct the local inspectors that it is the opinion of the Treasury Department that vessels of ten tons and under, if furnished with a bell six inches in diameter will comply with rule 14 of the act of Congress approved February 8 last. On vessels upwards of 10 tons gross and not exceeding 30 tons gross, the bell supplied should weigh at least 30 pounds. Steamers above 30 tons gross should be furnished with bells weighing not less than 60 pounds. All bells should be of good tone and quality, such as the local inspectors shall deem, in their discretion, suitable for the purpose for which the bells are intended.

REPORT OF CANADIAN MARINE.

The report of the Canadian Minister of Marine and Fisheries contains a good deal of information of general interest. The total number of vessels remaining on the register books of the Dominion December 31, 1894, including old and new vessels, sailing vessels, steamers and barges, was 7,245, measuring 869,624 tons gross, a decrease in tonnage of 42,915, as compared with 1893. The number of steamers on the register books on that date was 1,640, with a gross tonnage of 240,906 tons. Assuming the average value to be $30 per ton the value would be $26,088,720. The number of new vessels was 326, measuring 21,243 tons.

ELECTRICAL INDICATOR.

An instrument has been devised for the purpose of determining the location of sunken iron or steel vessels. The detector consists of an electrical arrangement carried on board the searching vessel and a sinker which is trailed along the bottom. The sinker is connected with the vessel by a light electrical cable of required length. The apparatus is so adjusted that when a sinker approaches a mass of metal sounds become audible in the telephone, while they are reduced in intensity as the sinker recedes from the metallic object. A year ago the Russian monitor Rusilka foundered in the Gulf of Finland, and until recently the exact location of the wreck has been unknown. The position of the vessel was determined by the use of the indicator or submarine detector. The search was continued for several weeks and the exact position of the vessel was at length placed beyond all question, as every time the searching steamer passed over a given spot the electrical indicator of the detector sounded loudly, thus affording evidence that a large mass of metal was submerged below. Capt. McEvoy is the inventor of this useful appliance.

VALUE OF LIFE.

Seamen, as well as those who do not go down to the sea in ships will be interested in learning that a verdict has recently been obtained for the loss of the life of Erik Anderson, who was on board the old schooner Wm. Aldrich at the time the craft was run down by the barge Parana. The disaster happened off Cana Island, Lake Michigan on the morning of Nov. 1, 1891. The Parana belonged to the tow of the steamer Holland, which was run down, with the loss of one of the sailors who at the time was asleep in the forecastle. His remains were never recovered as far as known and the administrator of the estate brought suit to recover the sum of $5,000 for the loss of the seaman, Erik Anderson, and the court granted $4,000. The defendant, Anson A. Bigelow, appealed the case from the United States district court of the eastern district of Wisconsin, and the case will now come up for argument very soon, as the preliminaries are all arranged.

Mr. Bigelow is owner of the steamer Holland and her consorts, the Parana and Stevenson, and the final result will be awaited with a great deal of interest, as it is one of the most singular cases ever brought into court. Chas. F. Kramer, the well known admiralty attorney of Chicago, represents the interest of Mr. Bigelow.

CHANGES IN THE CORPS OF ENGINEERS U. S. A.

Gen. Casey, chief of engineers, retired last week. Col. Wm. P. Craighill will be appointed his successor as brigadier-general and chief of the corps of engineers. Gen. Craighill has been in charge of river and harbor improvements in Maryland, Virginia, West Virginia and Delaware, with headquarters at Baltimore. He is an author of note, a member of the American association for the advancement of science and ex-president of the American society of civil engineers.

The promotions that follow Gen. Casey's retirement, aside from the promotion to chief engineer, are as follows: Lieut.-Col. John W. Barlow, to be colonel; Maj. David P. Heap, to be lieutenant-colonel; Capt. Wm. L. Marshall, to be major; First Lieut. Henry E. Watterman, to be captain; Second Lieut. Edgar Jodwin, to be first lieutenant.

BILGE KEELS.

Recent naval experiments with the ancient bilge keels show that they are capable of reducing the extent of rolling from 50 to 70 per cent; of accelerating the process of extinction of rolling sixfold; of increasing the rolling period so as to enhance steadiness; of developing to its fullest extent the value of headway in assisting steadiness, and of reducing materially the tactical diameter in turning as well as improving steering properties, while speed is uninjured and coal endurance not affected. It is difficult to see even with the theoretical experiments usually indulged in by naval experts how the two latter claims can be practically substantiated as bilge keels have been condemned in the Atlantic service on just these very grounds.

NEWS AROUND THE LAKES.

CHICAGO, ILL.

Special Correspondence to The Marine Record.

Capt. John Prindiville chartered the steamer John Duncan for wheat to Toledo at 1¼ cents.

J. G. Keith & Co. chartered the steamer Thomas Davidson for oats to Buffalo at 1 cent.

Carr & Blair chartered the steamers W. F. Sauber and Lindsay for wheat to Buffalo at 1¼ cents.

John Gjeston & Co., sailmakers, have removed their sail loft to Nos. 254 and 256 South Water street.

J. J. Rardon & Co. chartered the steamers Bulgaria and Samuel Mitchell for wheat to Buffalo at 1¼ cents.

Wildman Bros., Excelsior Steam Boiler works have leased the boiler making department of the Excelsior Iron Works 87 to 93 N. Clinton street. A specialty will be made of marine work.

P. H. Fleming & Co. chartered the steamer Normandie for wheat from Chicago to Milwaukee at 1 cent, the steamer Ionia and barges Hurlbut and Clint for wheat to Toledo at 1¼ cents.

The schooner Charlie Marshall, captain, San Nelson, made excellent time on her last trip. She made the run from Chicago to Frankfort, loaded a cargo of lumber and returned to Chicago in 72 hours.

The schooner John Kelderhouse, which left here light for Alpena, Sunday, to load lumber, ran back after she had gone about 100 miles down Lake Michigan. On her return she was chartered for a cargo of oats to Sarnia.

C. W. Elphicke & Co., chartered the schooner John Kelderhouse for oats to Sarnia at 1 cent, the schooner Cheney Ames for wheat to Midland at 1¼ cents, the barge Alvira Cobb for wheat to Toledo at 1¼ cents, the steamer John J. Hill for corn to Kingston at 2¼ cents.

Mr. Geo. L. McCurdy, manager of the lake department of the Insurance Co. of N. America has been appointed to represent the underwriters interested in the cargo of the foundered steamer Cayuga. The underriters will find out the condition of the Cayuga and if worth the cost will raise her.

A meeting of cargo underwriters was held in Chicago on Tuesday, to endeavor to come to an understanding as to forming a cargo pool. The following were present: H. Townsend Davis and H. Sill, Buffalo; David Vance, Milwaukee; J. J. Clark, Detroit; Mr. Bigelow, St. Paul, and the Chicago cargo underwriters.

The Bigelow Bros. steamer Madagascar, Capt. John Jenks, and consorts Fanny Neil, Capt. C. K. Moon, Parana, Capt. John Mulvaney, and Stevenson, Capt. John Cowan arrived here with lumber from Washburn on Monday, on their first trip this season. They experienced a heavy gale and snow storm nearly all the way up Lake Michigan.

Many improvements have been made on the fleet of the Goodrich line this season, all of the boats have been more thoroughly overhauled than ever before. The Chicago has been rebuilt and is now as good a vessel as the day she was launched. A great deal of new work has heen put into the interior of all of the boats, which has given them a changed appearance for the better.

The W. L. Scott Coal Co. has discontinued its local offices and leased its docks and transferred its business in the west to the firm of O. S. Richardson & Co. The latter firm has moved its office from No. 56 La Salle street to the offices formerly occupied by the W. L. Scott Co., at No. 225 Dearborn street. Representatives of both firms say the change is made for united benefit, as it will increase the business of both and greatly reduce expenses.

Charles L. Meyer, of the Graham, Meyer, Torch & Liquid Light Co., of Boston, gave an exhibition of the company's torch lights at the Chicago water works crib, Wednesday night, last week. The Dunham Co.'s tug, T. T. Morford, in charge of Captain J. R. Sinclair, took out a party of marine men to view the lights. Among those present were Captains John Prindiville, J. G. Rardon, J. A. Calbick and Henry Channon, John F. Hodell, T. B. Banner, George Brown, E. W. Berriman, Tom Prindiville, J. H. Channon, H. Channon and THE RECORD correspondent. The torch lights were exhibited from the north side of the crib, the tug laying-to about one-half mile away. The moon was nearly at the full and shining bright. Notwithstanding that disadvantage, all those present pronounced the company's bright light a great success. The company's blue, green and red lights also shone brightly and were considered excellent. The lights are non-explosive and rain or spray will not extinguish them, while the stronger the wind blows the better it burns. It is undoubtedly the best patented torch now in the market. H. Channon Co., Chicago, are agents for Lake Michigan, Lake Huron and Lake Superior.

CLEVELAND, O.

Special Correspondence to The Marine Record.

Capt. Wm. Ferguson has been appointed master of the steamer H. D. Coffinberry.

The steamer Yatto is to be put on the route between Lorain and this port next week.

M. M. Drake, of Buffalo, visited this port on Wednesday and left in the evening for Duluth.

The steamer North Land will be given a trial trip on Tuesday afternoon, leaving the builders' yard at 1 p.m.

Assistant general manager of the Northern Steamship Co., Mr. Fred. Gordon, spent Wednesday at this port inspecting the North Land.

Beginning June 1, the Detroit Line steamers will run Saturday night excursions, charging $2.25 for the round trip, returning Sunday night.

Capt. George F. Lawrence has been appointed master of the steamer Jim Sheriff, and Capt. R. E. Seely master of the schooner St. Lawrence.

Mr. J. R. Oldham, representing Lloyds underwriters, left here on Wednesday to ascertain what means, if any, can be taken to raise the Cayuga.

Capt. Herriman, of the Bureau Veritas made his final survey this week on the new steamer Chili. She will be given a high rating in that classification society.

The annual fish dinner given by shipping-master Rumsey of the Lake Carriers' Association, at the dock shipping office, was attended by a large number of owners on Wednesday and was pronounced a success.

The Parks Foster, Alcona and Mariposa have been in the Cleveland dry dock this week. The latter steamer is now undergoing extensive repairs occasioned through her grounding in the Hay Lake cut; 28 plates and 32 frames were damaged.

The Vessel Owners Towing Co. and the Cleveland Tug Co. will each hold their season contracts for towing and divide up equally on all general towing. Competition had become so keen and spirited that fuel bills and wages eat up all the receipts.

The large steamers I. W. Nicholas and Siberia are in the Ship Owners' dry dock this week and will be there a few days yet repairing heavy damage. The Nicholas shows 38 plates and 60 frames damaged with stem to be scarphed, at a cost of about $12,000.

The Cleveland & Buffalo Transit Co. have just issued their annual summer turist books. It devotes especially attention to Niagara Falls, and gives many valuable hints. Gen. B. Pars, agent; W. F. Herman will mail the books to any address on receipt of 4 cents postage.

The steamer J. S. Fay, of the Bradley fleet, has been chartered by the Minch Transit Co. of this port for the season to take the place of the lost steamer Everett. She will tow the schooners Sophia Minch and George Warmington. The entire crew of the Everett has been re-employed for the Fay.

Buffalo fire commissioners were here this week examining the plans for underground pipes connected with the fire-boat. The system originated at this port and has since been generally adopted as by its use a fire-boat is made a movable waterworks for the benefit of all districts adjacent to the river front.

At the yards of the Cleveland Ship Building Co., the steamer Chili, owned by the Drake syndicate, of Buffalo, is nearly ready to leave on her first trip, being slated to clear on the 25th. Work on the steamer Yale, building for Cleveland owners, is being advanced rapidly and as large a force of skilled labor as can work to advantage is engaged in her construction.

Work at the yards of the Globe Iron Works Co. has been seriously delayed on account of the Carnegie Co. not shipping in steel, and their contract is likely to be cancelled. The large steel schooner now under construction for Fairport owners will be launched in July and the fleet of six canal vessels comprising one steamer and five consorts will be ready shortly after. The consorts will carry 220 tons and the steamer 175 tons on 6 feet draft.

With the opening made in the west arm of the breakwater it would surely be a good thing, if from a sanitary standpoint alone, to have a cut made from the head of the old river-bed to the outer harbor. There will be no fairway or channel for large-sized vessels to go through the new opening in the breakwater but the cut might be made large enough from the river bed to permit all classes of tonnage to use it after some dredging had been done in the outer harbor.

The yacht Liberty H. Ware left here for the Islands on Friday night and was caught in the gale of Saturday. She was well manned and handled, and consequently lived through it, but there are some of the fishing party ready "to swallow the anchor" after their experience; Capt. John Moore, J. H. Bartow, Judge Ware, W. H. Becker, Frank B. Skeels and Fred Saal were of the party. W. H. Becker distinguished himself by shinning aloft in the height of the blow and sending down a topmast that had carried away.

BUFFALO, N. Y.

Special Correspondence to The Marine Record.

Only six elevators, all railroad houses, are now running.

All the tugs of both the Buffalo lines have been equipped with life rafts.

It required three tugs to get the Tokio, drawing 16 feet 8 inches, to the city elevator this week.

The North Wind's repair bill will reach nearly $8,000, as a result of grounding at the head of Hay Lake.

The canal boat H. Belden was sold last week to satisfy a claim of Robt. O'Neil, who bid in the boat for $320.

J. H. Bowles, 227 Franklin St., has still a number of the large sized photo sheets of lake master's for sale.

The North West will go out into the lake to turn over her machinery and test her compasses in a few days.

The steamer Weed had to tow down from Detroit River with the Balize, having lost the key to her wheel.

The Ogarita, drawing 13½ feet had to lighter part of her lumber at the breakwater in order to get down to Tonawanda.

The barge Unadilla has been libeled for $1,726.28, on a claim growing out of a collision with the Cummings on Niagara River in November, 1893.

The fueling question is now practically settled in favor of the vessel owners. A coal charter no longer implies a heavy tax on the vessel for fuel.

The police commissioners contemplate a trip to New York, Philadelphia, Washington and Chicago, to look over the patrol boats, with a view to establishing such a service here.

The Union Dry Dock Co. launched Hand & Johnson's new tug Thursday. She is 82 x 19 x 12½ feet, with engines 23 x 28 inches and boiler 14 x 8½ feet. She is allowed 150 pounds pressure, and has hydraulic steering gear.

Buffalo and New York State people are getting anxious over the fate of the bill to substitute two lift locks at Lockport for the seven ordinary locks. The measure is a meritorious one and in the interest of economy.

The army engineers will meet May 27, to discuss the new harbor plans for Buffalo harbor, which will be completed before congress assembles. Secretary Lamont has promised his support, in aid of the appropriation.

Engineer Desot, who had the Rube Richards libeled on account of damages he claimed to have received from the master of one of the fleet last season, has effected an amicable settlement with the owners, and now has a berth on the Queen of the West, also of the Minch fleet.

Manager French, of the Union line, says he will make no charge against the steamer Everett on account of the services of the steamer Eber Ward, which secured some of the Everett's boats and part of her outfit, beside rescuing her crew. Mr. French's chief clerk is W. J. Stewart, ex-auditor of the Northern line.

A Cleveland vessel owner is quoted as saying that he and his confreres were overcharged for fuel last season, at this port to the aggregate sum of $217,000. Now, only 90,000 tons of fuel was sold last season, which at $2.40 per ton would amount as a whole to only $216,000. It has been suggested that the Cleveland owner has been studying the silver question and got mixed.

Judge Lambert has decided the Front street dock suit in favor of the city, giving it possession of the docks between Main and Washington streets. This may be embarrassing to the Northern Steamship Co., which has

a lease of the dock for its big passenger steamers. It is probable that the Lackawana people will throw open their dock, west of Main street, while the Northern line boats are in port, to the excursion steamers, thus avoiding all controversy.

MILWAUKEE, WIS.

Special Correspondence to The Marine Record.

The steamer Charles McVea has gone upon the route between this port and Muskegon.

A grand piano which took a prize at the World's Fair has been placed on board the steamer Nyack.

A passenger rate war between here and Chicago has cut rates to $1.50 on the Goodrich and $1.00 on the Hurson line.

The Marinette Lumber Co., has sold the propeller Annie D. to Andrew Johnson of Fort Howard, Wis., for $1,000.

The Muskegon steamer Nellie will go on the passenger and mail route between Harbor Springs and Beaver Island.

The steamer Bon Ami is having her passenger capacity enlarged at Saugatuck. She will go into commission in about a week.

John M. Longyear has sold the steamer, City of New Baltimore to S. W. Chamberlain of Green Bay, Wis., for $1 and other considerations.

W. W. and L. L. Hill have sold their half interest in the tug L. P. Hill at Fish Creek to P. N. Chambers and N. L. McDonald for $2,200.

A strong tidal current swept into Milwaukee River the other day, throwing the H. J. Jewett against the City of Milwaukee and causing some damage.

A new tug for Leathem & Smith has been launched at Manitowoc, and christened the Sidney Smith. She is 90 feet over all with 85 feet keel and 18 feet beam.

The W. J. Averill brought all the McVittie's Milwaukee freight in last Thursday, the entire twelve carloads having been transferred while the McVitttie was stranded in Hammond's Bay.

It is stated that Grand Haven will be made the general headquarters for supplies and vessels of the government on Lake Michigan, and a repair yard will be established for doing work on government steamers and revenue boats.

It is now stated that the B. & O. railroad is about to buy or lease the old St. Joseph Valley R. R., between Buchanan and Berrier Springs, Mich., and the Elkhart & Western, between Elkhart and Mishawala, Ind. The report also states that the B. & O. will build from Milford to Elkhart and from Berrier Springs to Benton Harbor, getting therefrom a lake connection to Milwaukee and the northwest.

The steamer F. & P. M. No. 3, which has been lying at Ludington, is booked for dry-docking here soon, when considerable repairs to the keel and other parts of the hull will be made. While at Ludington the boat received such alterations as to make her an up-to-date passenger boat. The interior will be newly painted and recarpeted. As soon as the boat is ready for service, the No. 4 will go into the dock.

DETROIT, MICH.

Special Correspondence to The Marine Record.

The steamer Frost is getting a new rudder at the upper dry-dock.

The depth of water at Bissell's dock is not more than 15 feet at this stage, and much dredging will have to be done for the Northern Line boats.

Thatcher & Breyman, submarine engineers and contractors, have begun work on the intake pipe for the Erie, Pa., water works. It will be the largest and longest submerged pipe ever laid.

Last July the schooner Glad Tidings was sunk near Grassy Island in collision with the steamer Pathfinder, and among the lost was Capt. Michael Westphal. His widow has been authorized by the probate court to settle her claim for damages for $1,600.

The Gillett Tug Line has chartered the tug Gladiator for log towing and wrecking purposes. The Gladiator is one of the largest and most powerful tugs on the lakes. She is fitted with a compound engine with cylinders 22 and 40 by 36 inches and is allowed 115 pounds of steam. J. H. Gillett, manager of the line, hopes to secure the towing to Marquette of about 20,000,000 feet of logs during this seaosn.

A big Detroit steamer arrived at the "Soo" canal a few days ago with 2¼ cent wheat aboard and drawing 14 feet 1 inch, while the water over the miter sill of the lock showed a depth of only 13 feet 7 inches. How to get over without paying for a big lightering bill was a puzzler to the captain. He then bethought himself of a plan that has been worked before, but rarely, and got the consent of the canal authorities to its operation. Then he hired two tugs They stationed themselves just outside the sill, worked their screws for some little time, and backed such an amount of water into the lock as to enable the big steamer, which had meanwhile lightered two inches by blowing off one of her boilers, to float into the lock. She went through without touching.

DULUTH AND SUPERIOR.

Special Correspondence to The Marine Record.

It is stated that 60 per cent of the ore shipped from Two Harbors is carried without being trimmed in the vessel.

Ashland shipped 98,082 tons of ore last week, besides 840 tons of pig iron, 4,909,000 feet of lumber and 800,000 lath.

Captain Joe Doville, of Cleveland, is said to have purchased the Otego, which recently sank in St. Louis Bay.

The Ohio mine will probably ship 100,000 tons of ore this season. This was not included in the original Mesaba estimates.

It will not be the policy of the Superior Board of Trade to be arbitrary in the enforcement of the new warehouse law and probably no attempt will be made to enforce it before August 1, when the new crop begins to come in.

The steamer Missoula is in dry dock to repair damages to her stem caused by collision with the dock at the Sault.

SANDUSKY, O.

Special Correspondence to The Marine Record.

The new steamer Arrow measures 365.15 tons gross and 182.58 net.

The little steamer Peerless, with a capacity of 80 passengers is being fitted out to carry fishing and small excursion parties.

The steamer O. J. Hale, which was badly damaged by fire here last fall, has been thoroughly repaired and cleared for Lake Superior.

The steamer American Eagle has gone to Detroit to be dry-docked. Her hull will be scraped and repaired where needed, and the machinery and upper works will also receive attention.

The Sandusky Yacht Club, which numbers nearly 100 members, is making extensive preparations for a lively season. Local yachtsmen expect to figure prominently in the Put-in-Bay regatta this year.

Carkin, Stickney & Crams dredges were put to work Monday on the river channels. Assistant engineer Blunt has been busy for several days, taking soundings. A dredge will soon begin deepening the channel over the outer bar.

PORT HURON, MICH.

Special Correspondence to The Marine Record.

Fire on Sunday caused the destruction of McMorran & Co.'s large grain elevator and Davidson & McMorran's flouring mill, with a loss of about $200,000. The elevator contained 300,000 bushels of grain, which was owned by firms in other cities. The loss was only partially compensated for by insurance, and was the most damaging in the history of the city.

The steambarge Hopkins is having her machinery repaired at the Phœnix Iron Works.

The big tug C. D. Thompson has returned from Grand Haven, where she has been stationed all winter to assist boats in the winter service through the ice.

BAY CITY, MICH.

Special Correspondence to The Marine Record.

The fine steel twin screw passenger steamer "Virginia," is being put in excellent shape for the season and among other improvements it is expected that her dining room floor will be raised five or six feet which will increase its area and consequently the dining seating capacity, without at all detracting from its present elegant appearance. Her dining room will still be as high as that of any steamer on the lakes. She has been fitted with brand new propeller wheels lately which are in themselves a curiosity. They are three bladed, of fine polished steel and the hub presents as smooth an appearance as a billard ball, the bolt heads being all smoothly covered over with cement. The wheels are of a new and improved design by James Howden, cast by King and Andrews, and were made and finished at great cost by C. F. Elmes of Chicago. They are 11 feet diameter and 15 feet pitch and weigh each about 4,500 pounds. On her last trip with these wheels she made 19 miles straight and expects to do better this season. The whaleback with her new engines will require to burn some fuel to keep in the same water as the Goodrich Line steamer Virginia this season.

FLOTSAM, JETSAM AND LAGAN.

Capt. Williams, of the recently stranded McVittie, speaks highly of the arduous services rendered to his boat by the Hammond Bay Life-Saving crew.

At Escanaba, last week, M. H. O'Brien, the contract trimmer, who was engaged to trim boats at 2½ cents, was pounded and abused by the trimmers until he promised to keep away from the ore docks entirely.

The following light-keepers have been appointed: Wm. Cochems, assistant at Sherwood Point, Wis.; Ferdinand Ollhoff, assistant at Kewaunee, Wis.; Wm. P. Larson, second assistant at Poverty Island, Mich.

It is reported that the City of Kalamazoo advertised to leave South Haven, Mich., last Friday was held to her dock until after midnight on account of the superstition regarding starting out on the first trip of the season on a Friday. It is quite time that such an exploded notion should be wiped out, as it argues either gross ignorance, a desire to inconvenience the traveling public, or an utter disregard for the financial success of a commercial enterprise.

The schooner Anna P. Grover, which was released from North Manitou Island early last fall will tow behind the Ida M. Torrent this season.

Harry Stewart, the sole survivor of the Western Reserve, is sailing on the steamer E. M. Peck this season.

Toledo harbor is undergoing a general deepening process, both the government and property owners working to that end.

F. C. Denison will bring up the deep waterways question in the Canadian parliament. He wants the government to deepen the St. Lawrence canals, on condition that the Americans build a 20-foot canal from Youngstown to Niagara River above the falls.

Capt. McDougall has ceased giving his newly built whalebacks trial trips. He claims that the new boats have never yet failed. The John B. Trevor was started for a cargo from the shipyard immediately after completion.

The spot where the steamer A. A. Parker recently stranded on N. Manitou Island, Lake Michigan, is the site contemplated for a light-house and fog signal. Hammond's Bay, Lake Huron where the McVittie went ashore is another dangerous locality and a fog signal at least ought to be established there. A life-boat station is the only present aid and the crew did noble work in assisting the McVittie last week.

The flour which the steamer I. W. Nicholas threw overboard at Caribou Island is floating around Lake Superior. The Athabasca, bound down, passed through several hundred barrels of it 15 miles south by west of that island.

The damage to the Welland Canal at lock 21, caused by the steamer Jack, of the Calvin fleet, Kingston, which interrupted navigation on last Wednesday, is repaired.

Carter Bros., the purchasers of the wreck of the burned steamer, N. K. Fairbanks have got her into Port Colborne. They expect to take about 30,000 bushels of damaged corn out of her.

The schooner D. S. Austin after being ashore at Ludington all winter will be rebuilt at Manitowoc.

The American Ship Windlass Co., Providence, R. I., are now manufacturing Babbit's Improved Anchor, patented this year. These anchors are galvanized up to a weight of 1,000 pounds and are designed chiefly for yachts of all sizes although the patent can be used for heavier tonnage.

Lieut. W. C. Babcock has been ordered from the New York navy yard to the sloop of war Michigan, on the lakes. He will be the executive officer of the ship. Lieut. C. P. Reese, who has been with the Michigan, has been ordered home, and Ensign C. B. Morgan, of the hydrographic office at Washington, ordered to the Michigan.

A MODEL LIGHT-HOUSE AND DWELLING.

It is pleasing to note the tendency which has been growing of late to make more agreeable the work of those who serve the government in the oftimes arduous capacity of light-house keepers. For a good many years THE RECORD has noticed with regret that any improvements upon the old-time methods in vogue have been looked upon with distaste by those in authority, and have been abandoned for no other reason than that they were innovations.

If the plans now made under the direction of Col. Jared A. Smith, Corps of Engineers, U. S. A., are approved by the Light-House Board, Sandusky harbor will be able to boast of having what is probably the most convenient light-house in the world, of the fourth, fifth or sixth classes. Of all the many lights of this description in nearly every case, if the light is not connected with the shore, the keepers have to put up with the most primitive methods of living and keeping house, which does not tend to make less dreary the lonesome hours which are inevitable.

The new light-keeper's residence will be erected upon a crib at the mouth of Sandusky Bay, and in connection with the outer light of the new Sandusky Bay range. It will probably be completed by October 1. The crib will be 50 feet square and built according to the latest methods. The grillage bottom and most of the crib in fact, will be built without the dovetailing which has heretofore proven so inadequate. Col. Smith finds that better results can be reached by placing the ends and sides of the timbers flush against each other, and giving the added strength by means of upright pieces 4 inches square, placed in the four corners of each compartment, and where practicable, running iron rods longitudinally through the cross-walls. The only dovetailing that will be done in this crib will be around the walls of the lower compartment of the dwelling, really its cellar, and it will be done here only to make it a well finished job.

The crib foundation is to be laid upon the sand, but Col. Smith has hit upon a plan evidently overlooked by the foolish man of Biblical lore, and has taken the proper precautions to prevent undermining. The process of undermining is not, as many suppose, a scooping up of the sand as the waves come in, the sand being carried back as a scattered sediment. The waves, it must be borne in mind, are largely confined to the surface, where the motion is unobstructed. The mass of water rolls against the side of the crib, and the sudden interposition of a solid substance merely diverts its course, and causes it to shoot up into the air a distance of ten to sixty or a hundred feet, according to the momentum acquired. The immense body of water remains suspended an instant in the air, and then falls, with tremendous force, perpendicularly down the sides of the crib. It is this fall that drives out the sand, and causes it to flow back as sediment in the receding water.

The bottom of the crib will rest in a hole some 2½ feet below the bottom of the bay, and some 66½ feet square.

There will thus be a space of 16½ feet all around the crib, which will be filled with thick brush mattrasses, weighted down with heavy stones. This will, as has already been proved by experiment, avert all danger of undermining, answering the same purpose as an apron, in starting the wave on its return journey at or a little above the level of the bottom.

The method of protecting the crib from the ravages of ice while at first blush apparently rather primitive, really shows careful thought. Pieces of oak, six inches thick, and 15 feet in length, extend from four feet below the water line to four feet above the top of the crib, with a neat capping, half-way around the crib. On the other half, extending from the middle of the east to the middle of the west side, the upright pieces extend only to the top of the crib. These will be fastened to the crib with screw bolts, and when worn off by the ice, can easily be removed and replaced, as needed. The reason for using the oak posts instead of steel plates is that as the water soaks in behind the plates and freezes, the expansion tends to loosen the plates and the bolts which hold them on, until in time the plates are torn off and lost. Col. Smith will probably fasten strips of half-round steel, an inch wide, to these posts, extending for possibly a foot above and a foot below the water line on which the ice may tend to wear itself out.

From a point 4 feet above the mean level of the bay and lake, the crib will be hollow, a wall 10 feet in thickness surrounding a compartment 30 feet square, and 7 feet in height. This will be the cellar of the keeper's dwelling and a very convenient cellar it is. In one of the compartments of the grillage there will be built into the crib, before sinking, a square wrought-iron pipe, surrounded, after sinking with concrete, and extending several feet below the bottom of the crib. This will form a well of excellent lake water, well filtered by passing through several feet of sand. The concrete around it will serve to prevent freezing, and a pump at the top will insure a constant supply of the best water, in winter and in summer. Not far distant, a soil and sewage pipe, also surrounded by a concrete protection, descends through another compartment of the grillage some four feet below the surface of the water, and passes out through the sides of the crib in a slightly inclined direction. It will be supplied with water from the wasteway of the pump, and will pass off all sewage below the ice even in the coldest winters.

On the landward side a passage six feet wide extends outward from the cellar, through the side. In this passage there are four steps, each one foot in height, and the entrance is thus at the water level. At the middle of each step is a spool trunnel, and when a boat lands at the door it can easily be hauled up into the cellar by means of a winch in the cellar on the side opposite the entrance. Two pairs of strong oak doors will protect this side, each pair of doors shutting against one of the two lower steps, at the bottom, and against strong oak beams at the top.

The house will be 28x30 feet, giving a promenade of eight or ten feet all around. A parapet, four feet in height from the deck of the crib, and formed of the outside planking as above, will afford protection on the lakeward side, extending half way back on the eastward and westward sides, the remaining half of the deck being guarded by a neat rail, similar to that on passenger boats. Rigging for hoisting a boat, and also companion ways will be supplied for the top, so that a landing can be made at times when the water is too rough to make a landing advisable at the doors below.

The house will necessarily be rather low, as the front light of the range is to be only 32 feet above the lake level. A very nicely arranged house will be provided, however, with commodious living apartments. The walls of the house will be lined with brick, a space of two inches between the brick and the plaster preventing dampness. In addition to the ordinary sets of windows, to be raised and lowered, each aperture will be provided with an inside window with hinges at the side to be placed in use during the winter season. The apartments will be ceiled with hardwood, except the oil room, which will be lined with corrugated iron.

Two improvements which Col. Smith has devised for light-house lanterns in general may be applied to this lantern. In every case in lights of the three lower orders, a light-keeper now has to squeeze through a trap door, after climbing a ladder to get into the lantern tower. The reason a staircase has never been allowed has been the very small amount of room there is to spare around the light. This difficulty has been overcome in a very ingenious way. In these lanterns there is always a table provided on which the oil reservoir is to be cleaned and filled, and similar work done. This table is, of course, built against the wainscoting of the lantern, and Col. Smith has hit upon the plan of utilizing the room under the table to provide the extra room necessary for an entrance by winding stairs. When a person coming up the stair reaches a height when his head would strike the table, he will find himself out from under it, the remainder of the ascent requiring no more room than is now occupied by the ordinary trap door.

Another improvement which this light will contain is a doorway leading from the lantern out upon the balcony. Heretofore, in the lights of the lower orders, the keeper, when he wished to get out upon the balcony to clean his glass, was obliged to lie upon his stomach or his back, and wriggle through a manhole in the wainscoting below the glass. In this particular light it is a simple matter, comparatively, to arrange a doorway in the reflector or land side of the lantern. The door will be double, one opening inward and the other outward, and they can be closed so tightly that there is not the slightest danger of enough wind getting inside in the wildest nights to extinguish the lights or cause it to flicker.

In this feature an instance may be mentioned to show that the lakes are not behind the rest of the world in the conveniences of the lower orders of lights. Two German engineers were returning home leisurely from the World's Fair, and in the course of a visit in Cleveland, where they inspected a number of engineering feats, called on Col. Smith, who casually mentioned that he had overcome the difficulty experienced by light-keepers in getting out upon the balcony. When he had explained it one of the visiting engineers said he had just worked out the problem in practically the same way, and as he was a member of the German light-house commission, expected to introduce it at home.

NOTES.

IT is now reported that the Herreshoffs had put in a bid to build six torpedo boats for the Spanish government. These boats, it is stated, are to be from 95 to 120 feet in length and of a speed of from eighteen to twenty-one knots an hour. They are to be used as patrol boats along the coast of Cuba. It is stated that the Herreshoffs have put in a very low bid and expect to receive the contract.

THE movements of our atmosphere are to be studied primarily as problems in the mechanics and thermodynamics of moving gases and vapors, but our knowledge of the empirical relations between atmospheric phenomena and terrestrial magnetism has been elucidated by a few special students, and further study in this direction has been recognized by the Chief of the Weather Bureau as proper and desirable, including that of auroras and earth currents.

ARRANGEMENTS have been completed for the establishment of a steamer line from Portland, Ore., to Japan and China, the announcement of which was made several weeks ago. The Oregon R. R. and Navigation Co. have entered into an agreement with Samuels, Samuel & Co. of Yokohoma and other parties, who will place two steamers on the route, making monthly trips. The first steamer was scheduled to leave Hongkong May 1 and Portland June 1. The steamers will have a carrying capacity of 3,000 to 3,500 tons.

A NEW YORK balloon maker is turning out a sample set of balloons for vessel owners of that port to be used in case of shipwreck on a lee shore. The outfit consists of a machine for making hydrogen gas under pressure, so arranged that its flow can be controlled. The gas will be used to inflate a small balloon of sufficient size to carry a line ashore from the imperilled ship, by which a heavier cable can be drawn for the passage of the crew or goods. With the proposed balloons no apparatus is needed on shore, and the same wind that is blowing a vessel on the beach will take the balloon to land. Further and final experiments are to be made in a few weeks and are being awaited with much interest by those engaged in shipping.

IT is estimated to cost about $12,000 to dock, clean and paint a steel cruiser, and this has to be done every four or five months. There is now an idea of electroplating the entire bottom, which would cost a trifle less than $8,000, and is said to last three years at least. This is done by means of boxes fitting the various parts of the hull, frames and sheer which are made water-tight by the use of rubber packing. The electroplating fluid and necessary batteries are then applied to the carefully-cleaned hull, and in three days' time there is a continuous plating of copper over the metal. What effect there may be in salt water between steel and copper or whether some galvanic action may set in or otherwise has not yet been fully determined although the general assumption is that steel unlike iron will not have a deleterious effect on the shell plates.

OLD TIME LAKE FREIGHTS.

Several old-time bills of lading, which Capt. Orville W. Green, now of the steel steamer Griffin, has in his possession, shows the great reduction which has been made in lake transportation charges within a few decades.

In a bill of lading dated at Milwaukee, May 25, 1863, the schooner Czar, of which O. W. Green was master, C. J. Kershaw shipped to the order of B. Hagaman, Oswego, 23,800 bushels of wheat at a freight of 15 cents per bushel. Another Oswego charter, dated Chicago, Nov. 16, 1864, shows that Whitney & Woodruff consigned to Cheney, Ames & Co., Oswego, N. Y., 22,230 bushels of wheat at a freight rate of 20 cents per bushel, making a gross freight of $4,446, and there is a receipted bill of lading duly signed by Cheney, Ames & Co., showing that they paid, less all deductions, $4,131.65, figures by the way which would make vessel owners dance a hornpipe if they could be secured at this time. A cargo of 2,600 barrels of salt shipped by H. B. Parmelee, Nov. 13, 1864, from Bay City, and consigned to H. H. Hayden, Chicago, called for the handsome rate of 41 cents per barrel.

If figures like these could be obtained now, all the shipyards on the lakes would not be able to supply the demand for tonnage. Yet, it is worthy of note, as showing the general trend of lake transportation rates during the past three decades. It is safe to say that although Capt. Green has now charge of a large modern steel steamer, her season earnings will not even approximate the amounts earned by his little twenty-thousand-bushel schooner in 1864.

OIL AND ELECTRIC LAMP FIXTURES.

(ILLUSTRATED.)

Among the most prominent manufacturers of oil and electric light fixtures for the navy and higher class of merchant tonnage is the firm of Wm. Porter & Sons, 271 Pearl street, New York. This firm has recently been given an order to equip with electrical signal lights the two new American Atlantic liners St. Paul and St. Louis. They have also received a carte blanche order from the Herreshoff Manufacturing Co., to furnish the new cup defender with a set of signal lights, to be made entirely of aluminum, which is something new in the manufacture of yacht lamps.

Cut No. 1 shows the electric signal lamp which the firm of Wm. Porter & Sons make as a specialty and each equipment up to date has given the best possible satisfaction wherever placed. These signal lamps are made strong, of excellent workmanship and perfect in every detail, satisfaction being guaranteed on all orders placed with the firm.

Cut No. 2 shows the electric signal lamp known as the United States Navy Standard 2 light electric, with revolving top admitting the throwing into focus of either lamp or both; made of bronze metal with imported French lenses, water tight openings, rubber washers and fastened by thumb screws; riveted throughout and lined with corrugated nickel metal reflectors.

ELECTRICAL SIGNAL LIGHT.

The immediate and special attention of Wm. Porter & Sons is directed toward the superior equipment of yachts and steamships with their electric and oil fixtures besides the manufacture of light-house and harbor signal lights and electric and oil lamp goods for the U. S. Navy.

SUBSIDENCE OF LAKE MICHIGAN.

FERRYSBURG, MICH., May 14, 1895.

To the Editor of The Marine Record:

The question as to the effects of the Chicago drainage canal on the present level of Lake Michigan, has attracted the attention which its importance demands. And in the remarks made concerning it, I see that all the factors that enter the problem have not been taken into consideration. Among these, the mistake is made of comparing the outflow of the canal—600,000 cubic feet per minute, or 10,000 cubic feet per second—with the total outflow of all the four lakes, as measured in the Niagara River.

This would assume that Lake Michigan takes inflow from Lakes Superior and Huron, at least. But this is a mistake. It should be known that Lake Michigan is in no way a recipient of inflow from Lake Huron, except temporarily by the force of the wind, so that a comparison of the outflow from the canal must be made with the volume of inflow of all the streams that empty directly into Lake Michigan and not at all with the inflow to other lakes, as has been done by eminent authority.

Though our charts tell us that Lakes Michigan and Huron are on the same level, we know, without being told, that such an idea is a mistake. The total inflow to Lake Michigan finds its outflow through the Straits of Mackinaw, and a motion in a body of water always implies a pressure of some kind, as from a head, to generate this motion, we may conclude that the level of Lake Michigan is higher than that of Lake Huron.

We are informed by geographies (see Gray's Atlas of the United States) that this difference of level is 5½ feet —thus giving a slope of about 1 inch or 1¼ inches to the mile through the Straits of Mackinac. Mr. Gray does not give us his authority for this statement, nor does he tell us how this fact was found—whether by precise leveling or otherwise—but certain it is that a head exists there that is just sufficient to create a current, such that its volume of outflow is just equal to the total volume of all those streams that debouch into Lake Michigan.

If this difference of level is 66 inches as stated, and if the comparison must be made between the outflow of the canal, 10,000 cubic feet per second and that of the four lakes, 200,000 cubic feet per second, *i. e.*, if the outflow of the canal is but 5 per cent. of the total inflow, then it is easy to show that the head to carry off the remaining 95 per cent. will be 97 per cent. of the present head — whatever that may be—so if that is 66 inches, then the subsidence will be 3 per cent. of 66 inches, or, say 2 inches, which corresponds nearly with the results found by the Chicago engineers and others.

But, we have seen that this comparison cannot be made in that manner, but with the volume of inflow to Lake Michigan alone. True, a change in the level of Lake Huron would produce a corresponding change in the level of Lake Michigan, but not in their relative difference of level, for the inflow to Lake Michigan running the same, the outflow must remain the same, and as a consequence, the head to generate this outflow must remain constant, and so no increment to the outflow can be run from such change of head.

Making the comparison with inflow to Lake Michigan alone, and regarding the total evaporation for the year as equal to the total precipitation, which cannot be far wrong, we shall find a very different result, one not of a pleasant character to contemplate.

But an actual estimate cannot be made without an actual knowledge of the total volume of inflow. This we have not got nor can we get it without very great expense. No outflow of rivers below the Straits will avail us. We must depend on mere judgment as to the volume of the outflow of the canal, as compared with that of the inflow of everything falling into Lake Michigan.

People who are somewhat acquainted with the streams that fall into Lake Michigan would judge the outflow to be 25 to 40 per cent. of the inflow, for this Chicago drainage canal, when running wide open, is a veritable river in itself, a river as large or larger than any river flowing into the lake.

Suppose it is one-third of the total inflow, then the head will subside till it is just sufficient to carry off the remaining two-thirds. A very little calculation will show us that this new head must be 81 per cent. of the present head, whatever that may be, whence, if the present difference of level is 66 inches, the subsidence will be 19 per cent. of 66 inches, or 12½ inches, a sorry figure to contemplate when the government is spending millions of dollars to deepen the present waterways by that amount.

H. C. PEARSONS.

U. S. NAVY STANDARD 2 LIGHT ELECTRIC.

AMPLITUDES.

The following approximate amplitudes of the Sun's rising will be given each week in this column during the season of navigation. A second bearing may be taken by compass at sunset by reversing the bearings given for the nearest latitude, as the change in declination for a few hours makes but a slight difference in the true bearing of the Sun's rising and setting:

LAKE ERIE AND S. END LAKE MICHIGAN, LAT. 42° N.

Sunrise.	Bearing (degrees).	Bearing (points).
May 15	E. 26° N.	NE. by E. ¾ E.
May 20	E. 27° N.	NE. by E. ⅝ E.
May 25	E. 29° N.	NE. by E. ½ E.

LAKE ONTARIO, S. END HURON AND CENTER LAKE MICHIGAN, LAT. 44° N.

Sunrise.	Bearing (degrees).	Bearing (points).
May 15	E. 27° N.	NE. by E. ⅝ E.
May 20	E. 28° N.	NE. by E. ½ E.
May 25	E. 30° N.	NE. by E. ⅜ E.

W. END LAKES HURON AND MICHIGAN, LAT. 46° N.

Sunrise.	Bearing (degrees).	Bearing (points).
May 15	E. 28° N.	NE. by E. ½ E.
May 20	E. 30° N.	NE. by E. ⅜ E.
May 25	E. 31° N.	NE. by E. ¼ E.

LAKE SUPERIOR, LAT. 48° N.

Sunrise.	Bearing (degrees).	Bearing (points).
May 15	E. 29° N.	NE. by E. ⅜ E.
May 20	E. 31° N.	NE. by E. ¼ E.
May 25	E. 32° N.	NE. by E. ⅛ E.

With a compass correct magnetic, the difference between the observed bearing will be the variation for the locality. Should there be any deviation on the course the vessel is heading at the time of taking the bearing, the result after the variation is applied will be the amount of deviation on that course.

NEW LAKE TONNAGE.

The Burea of Navigation, Washington, D. C., assigned official numbers to the following vessels during the week ending May 4. Steam—Pine Lake, 388 tons gross, Grand Haven, built at Charlevoix, Mich.; Norseman, 660 tons, Port Huron, Mich., built at St. Catherines, Ont.; Hazel, 11 tons, Marquette, Mich., built at Washburn, Wis.

A POWERFUL SEA-GOING DREDGING STEAMER.

It may not be generally known that one of the largest hydraulic dredging steamers that has been built in this country is now approaching completion at the yards of Hugh Ramsay, Perth Amboy, N. J., for the United States government. This vessel is being built by the Bucyrus Steam Shovel & Dredge Co., of South Milwaukee, Wis., for the harbor works at Galveston, Texas, Maj. A. M. Miller, engineer in charge, and constructed throughout from the designs of Mr. A. W. Robinson, chief engineer of the company.

It is equipped with two centrifugal pumps, each having a capacity of 300 cubic yards of sand per hour, or 600 yards for both. These deliver the sand into the internal hoppers of the vessel, which have a capacity of 600 cubic yards. The vessel is a complete ocean-going steam ship in every particular, being equipped with compound propelling engines of 500 H P., which enable her to steam at a speed of 10 knots and her equipment includes two powerful electric search lights, as well as all modern appliances which go to make up a first-class vessel.

The vessel has been named the "Gen. C. B. Comstock," and is expected to be ready for service about July first, and her performance will be watched with great interest.

FOUR cruisers, the New York, Columbia, Marblehead and San Francisco, are to represent this country at the Kiel celebration.

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CLEVELAND, O., MAY 16, 1895.

THE opening rate this spring for the Erie Canal traffic is the lowest ever recorded, wheat being taken at a 2 cent rate and oats for 1⅜ cents per bushel per steam or horse-boat.

DRY dock surveys on steel steamers receiving bottom damage through stranding last week foot up to the respectable sums of from $6,000 to $12,000, about a score of plates and as many frames is the average repairs. The towage bills, detention of ship and jettisoning cargo is not counted in the above figures. Several "lame ducks" are now giving this dose to the underwriters, but the foundering of the Cayuga involving about $300,000, covered by insurance, takes the gilt edge off the premiums.

WITH the liberal terms embodied in this season's insurance policies especially for the favored A 1 steamers, it would appear that a considerable portion of their premiums had already evaporated. The long list of groundings and strandings and chiefly, too, of large new tonnage has been greater this spring than ever before. However, its an ill wind that blows nobody good and the shipyards and dry docks are always willing to handle the "lame ducks" thoroughly and expeditiously. The port of Cleveland has gained an enviable notoriety for making heavy repairs to metal vessels in the shortest possible time, furthermore, the bills have been pronounced by the best underwriting and salvage authorities as comparing favorably with the best work done at the cheapest ports in the world.

LAKE MICHIGAN LEVELS.

THE communication from Mr. H. C. Pearsons in our current issue calls attention to the fact that the level of the lower lakes need not be considered when deliberating upon the probable alteration of Lake Michigan levels occasioned by the waste or consumption required for the supply of the Chicago drainage canal. Attention has hitherto been mainly directed towards the outflow at Niagara Falls as being the key to the situation, yet, as Mr. Pearson pertinently suggests the lakes Huron and Erie are not the most essential factors in the question of Lake Michigan levels. It is, of course, highly improbable that such eminent engineers as Gen. Poe, Major Ruffner and Capt. Marshall comprising the commission appointed to inquire into this subject would be for a moment misled relative to the source or sources of supply and consumption for each locality, or that they had centered their proceedings in any way only in that which is properly due to the overflow at Niagara Falls, at the same time, it has been the popular belief if not clamor, that a series of obstructions at or above the Falls would diminish the waste, serve to back up the waters and compensate for the loss at the head of Lake Michigan. This view however, appears to be a fallacy when the contour of the bottom of the lakes is brought into the question and it is no doubt from this standpoint coupled with the surrounding watershed and other general physical conditions that the corps of engineers will most likely base their findings, nevertheless, the entire theory in a great measure simplifies itself when the variable influences of Huron and Erie are partially, though not totally, eliminated.

SURVEYING, CHARTERING, LIGHTING.

IT HAS been very pertinently suggested that river and harbor work from beginning to end ought to be placed exclusively in charge of one department. As, for instance, on the lakes, or elsewhere, the war department under the excellent management of the corps of engineers, U. S. army looks after the conservancy and improvement of rivers and harbors and there their duty ends. Then comes in the naval officers appointed by the light-house board under the secretary of the treasury to light and buoy the waterways made navigable by the secretary of war. Large bodies move slowly, consequently, on improvements being finished, the light-house board may not, in fact does not, take immediate cognizance of the completion of the work, at least, they should and must have time to turn around after receiving departmental notification of lights and other aids before they can be actually placed. Now this being accomplished, the work again falls back to the corps of engineers to furnish charts and sailing directions of the altered, lighted and improved waterways and here we find the navy department, hydrographic office, stepping in to alleviate the pressure on the corps of engineers, with the argument that sailors only ought to make charts for seamen, pilots, and navigators to handle. The weather bureau, department of agriculture, which by the way, has done more for the lakes outside of congressional action than any other government department is happily clear of this imbroglio, yet the status remains and we now have the engineer corps, light-house boardand a seeming contest between the former named service and the navy department relative to plotting what has been done towards improving channels and fairways. This state of affairs under different guises has been fought over time and again. The navy wants the coast and geodetic surveys to be entirely under its charge and with a good show of reason too, because naval officers practically carry out that work. Yet naval rulings have been debarred from entering into internal or lake interests on account chiefly of treaty stipulations, hence, the bulk of the entire lake work rested with the corps of engineers and the engineer officer has sometimes been the inspector of the light-house district as well, at least practically so. Now with the advances the hydrographic office, navy department, is making on the lakes, omitting the weather bureau entirely, it would appear as if a triantic departmental war of service precedence was about being foisted upon the lake community and this also to the end that it will, nay has, cost the lake commerce untold losses, and in this connection we refer chiefly to the charting, marking and lighting of the St. Mary's River this season. Would it not be advisable to concentrate departmental work, or at least, bring about harmony of interests where such a vast commerce is at stake during two-thirds of the year. It is impossible to do without the government engineer department in the conservancy and future improvement of river and harbor work. The question is, should the light-house board, or the navy department interfere in any derogatory manner with the excellent methods and undoubted efficiency of our formerly principal regime, viz., the corps of engineers.

THE LINE OF DEMARCATION.

IT is evident that the three mile limit from shore over which the adjoining territory has the right to exercise jurisdiction is not followed out on the lakes nor is there any neutral zone or unclaimed waters existing. The territorial line runs fairly midway through Lakes Ontario, Erie, Huron and Superior and each side of that limit belongs respectively to the United States or Canada irrespective of the distance from headlands, bays or other irregularities of the shore line.

The seizure of fishing nets this week on Lake Erie by the Dominion fishery cruiser Petrel, emphasizes the fact that the line of demarcation is to be strictly upheld in so far as the Canadian government authorities are concerned and it therefore behooves American fishermen to judge more carefully their course and distance from the point of departure or else stand the confiscation of their fishing equipment. It should be cited, however, that in a decision given by the United States Supreme Court, the lakes were to be regarded as the high seas. This decision, however, may be qualified if it is understood that for all purposes of international transportation, carriage by water, etc., the lakes are neutral territory, or free of passage according to treaty stipulations. Notwithstanding the foregoing, the territorial line is clearly defined and as we have said belongs to either power up to that limit, Canada strictly enforces the law upon her own citizens and is disposed to uphold it against the depredations of American fishermen also.

A NUMBER of Buffalo citizens, chiefly among the medical fraternity, are indulging in their usual periodical complaints against the sound of the fog horn at that port. It is no doubt annoying for a nervous patient to be obliged to lay back and listen to the occasional though regular blasts of the steam fog horn and if any mechanical contrivance can be devised that would deaden the sound shorewards experiments ought to be made in that direction. It is singular, however, to note that people living within a short distance of a railroad depot or near to where regular switching and shunting is being done accompanied by an almost continuous screeching of the railroad engine's whistle are not in the least annoyed but at the first sound of the fog horn up goes their aggravation point to a boiling heat. It would be well for these chronic objectors to remember that each blast of a fog horn may and usually does contribute to the safety of hundreds of lives and millions of dollars worth of property, according to the volume of business done at the port. Without this welcome warning signal of danger, lives would be jeopardized, commerce delayed and the port be ultimately declared as an unsafe one for shipping to frequent in thick weather. An adequate fog signal is a God-send to seamen and the public engaged in or using water travel on the lakes.

LAKE FREIGHTS.

The Escanaba ore rate advanced 5 cents during the week and a strong inclination is manifest to make the Lake Superior rate 5 cents better, at least, 65 cents is now asked from Marquette, while the 75 cent rate is firm from the head of the lake, with 80 cents in view.

There is little moving in coal charters, but with the settlement of the fueling question at Buffalo, more life will be found in the freight market from this on. Late charters from Buffalo are quoted at 30 cents to Chicago-Milwaukee and 15 cents Duluth; however, the less coal handled now or for the next few weeks the better the freight will be later in the season, and there is no reason why coal should not pay a fair living rate of freight instead of being carried for ballast during the finest weather on the lakes. Coal shipments from Ohio ports are more than light.

Chicago grain rates are on the decline, having dropped to 1 cent on corn and oats; wheat 1⅛ cent, instead of going up to 1½ cents from a ¼ cent less, as had been expected earlier in the week. Kingston corn at 2½ cents. The Duluth rate has been fairly steady at 2¼ cents on wheat, 3⅝ cents to Kingston.

The Lake Superior lumber trade is brisk, three and a quarter million feet having been covered this week from Duluth to Buffalo at 13 shillings and 2,000,000 feet to Chicago at 14 shillings. One and a quarter million feet is now for Ohio ports at 12 shillings, 3,000,000 feet to Tonawanda at 13 shillings and 2,000,000 feet at 14 shillings. At Ashland there is also a firm feeling and rates hold at $1.75 to Chicago, $1.62½ to Lake Erie.

THE WEEK'S CASUALTIES.

Heading the list of lake casualties during the past week was the collision in fog near Skillagalee light on Friday morning between the Lehigh Valley Liner Cayuga and the L. S. & L. M. Line boat J. L. Hurd, whereby the former foundered in 15 fathoms and the latter is beached as a constructive total loss. The loss on the Cayuga and her cargo is very heavy. The boat herself was one of five steel steamers of modern design, built within the last six years by the Globe Iron Works, of Cleveland, for the Lehigh Valley Transportation Co., Buffalo, and was valued at $175,000. She had 15,000 barrels of flour, valued at $70,000, and 30,000 bushels of oats, valued at $8,500, all of which will be a total loss. The Hurd was a propeller of 759 tons, built at Detroit by Duncan Stewart in 1869, and owned by Leopold & Austrian, of Chicago. She was allowed an insurance value of $15,000, and was covered for $10,000. The boats had been in sight of each other for some time prior to the collision but came together in a fog bank that prevailed as they were passing, the Cayuga was struck on the starboard bow abaft the collision bulkhead and the Hurd smashed in her bows, though being loaded with

lumber she floated until picked up. One life was lost.

The lumber laden schooner Kate Kelley from Alpena to Chicago, is given up for lost with all hands off Kenosha. Wreckage indicating the complete breaking up of her hull has been picked up. She was owned and sailed by Capt. Harvey J. Hatch, one of the most experienced masters saiilng out of Chicago. Years ago Capt. Hatch sailed the schooner Higgie to Europe and traded with her there for three years, returning with a cargo of salt from Spain, he was vice-president of the Shipmasters' Association in Chicago. It is most unlikely that any of the crew has been or will be picked up and this accounts for the loss of seven lives.

The schooner J. B. Kitchen went ashore on Monday at the southeast corner of Middle Island, and is expected to become a total loss. She had a cargo of 400 tons of plaster in bulk. The crew were rescued by the Middle Island Life-Saving crew.

Through an accident to the small passenger steamer Unique while on Lake St. Clair on Monday, three lives were lost.

While entering the harbor at St. Joseph, Mich., on Monday night, during a gale of wind the steamer Puritan grounded on the bar and but for the staunchness of her build would probably have left "her bones" there.

The schooner Quickstep went ashore near Sheboygan on Monday and will be hardly worth releasing. The crew were all saved.

While sheltered in Sand Beach harbor of refuge the consorts of the steamer Viking, the Unadilla, Maxwell and Linden dragged their anchors and went ashore.

The steamer Linden, from Lake Linden to Buffalo, with 1,400 tons of copper valued at $250,000, stranded about one mile from Port Hope on Tuesday morning. The Point aux Barques life savers rescued the crew of 14 men and the vessel was scuttled to keep her from pounding. As the steamer is a new one valued at $75,000, she will likely be released. The risk was fully insured.

The schooner H. M. Avery from Manistee to South Haven with lumber went ashore on Monday night while trying to make the latter port. The crew were rescued with great difficulty by the life savers.

The consorts of the steamers Specular and Roumania broke away in the northwest gale on Lake Superior last Monday and received more or less damage before being picked up again.

The schooners Truman Moss and the Robert M. Howlett stranded near Gladstone last week but were released wtth only trifling damage.

The barge Superior arrived at Toledo on Tuesday, having lost her mainmast in the gale on Lake Erie.

The schooner John O'Neill lost her foresail and foremast on Lake Erie during the gale on Monday.

A canal schooner, name unknown, foundered in ten fathoms two miles east of North Point. Racine tugs have stripped her of the spars and canvas v hich were out of water. The wreck is an obstruction to navigation.

The schooner Andrew Jackson was driven ashore two miles below Black River on Monday. Alpena tugs were sent to her assistance.

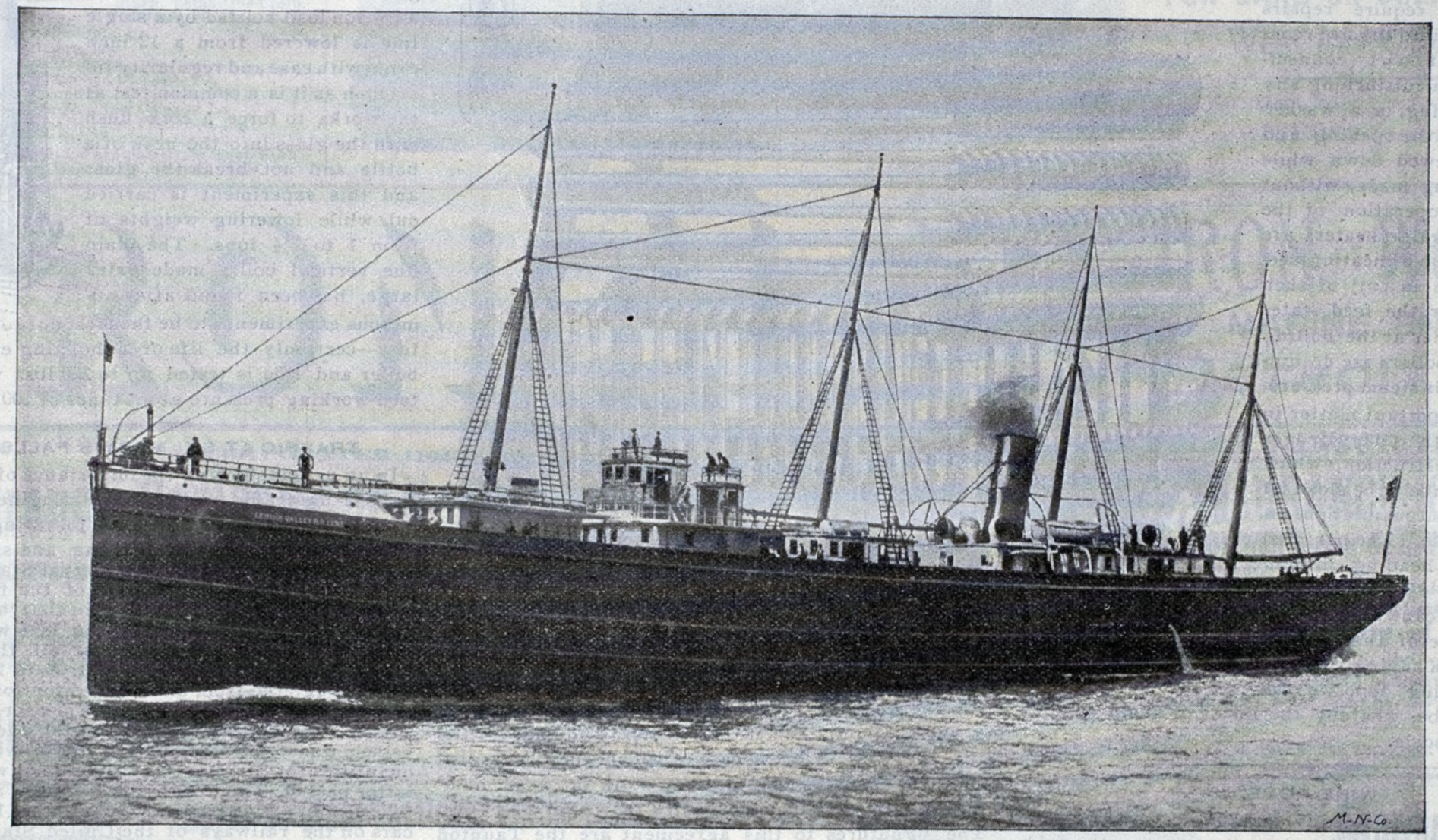
The schooner Alert was towed into Menominee, waterlogged.

THE CAYUGA-HURD COLLISION.

The loss of one life and upwards of $300,000 through the collision last Friday between the Cayuga and Hurd, is a matter requiring the closest investigation by the proper authorities. The accompanying cut of the Cayuga will permit our readers to judge of the type of craft she was. Builders may build, expert architects may rate and class, underwriters can insure, yet after all this the structure must be handled properly to be kept afloat.

In an interview with the supervising Inspector-General of steamboats, Jas. A. Dumont, he said that he regarded it as a matter of great importance to determine whether the accident was due to defects in the recently enacted White law providing rules of the road or to carelessness or lack of understanding of the rules on the part of the pilots of the two vessels. "If the statements made in the newspapers are true, it is clear that the rules issued by this office under the White law were not carried out. The vessels seem to have given the signals which would make a collision certain, but I will not form any conclusion on the subject until I receive the official reports of the disaster."

Commissisner of Navigation Chamberlain said he was not sufficiently familiar with the facts to express an opinion as to the cause of the accident. "I hope," said he, "that it cannot be attributed to the new law." And so must all others, but this assumption should be placed beyond a doubt.



STEEL STEAMER "CAYUGA" FOUNDERED THROUGH COLLISION MAY 10.

NEW SYSTEM OF PLATING.

W. Doxford & Sons, Sunderland, England, are using an improved system of plating ships. From a brief description given in *The Steamship*, Leith, it appears that the invention consists in "joggling" the plates by means of a machine instead of riveting the plates in the ordinary way. The "joggling" consists of an indentation of the plate along its entire length, so as to leave a space for the next plate to fit in, the result of which is that the inside skin of the ship presents a level surface fitting close against the frames. This means, of course, that what is technically known as "packing"—that is, the filling up of the interstice between the outside plate and the frame—is done away with, and the material used in packing is dispensed with, as well as the labor which it involves. The ship in consequence is lighter, stronger and more buoyant. The invention has been tried on a vessel called the Turret Crown, which was launched last month at Sunderland, and it is stated that in this case there is a saving of 70 tons deadweight. The invention is considered an important one.

MERIT REWARDED.

The recently elected president of France has conferred upon the chief engineer of the Atlantic line passenger steamer La Gascogne the honor of knighthood in the Legion of Honor for his skillful services in working the steamer to port after one of the pistons had broken, involving the working of only two cylinders and the disconnecting of the third. Such a graceful and thoughtful act of the president of the French Republic can not but redound to the honor and prestige of marine engineering and those who are engaged in the every day practice of same. It is but a just recognition and a sign of the times that engineers are to be more liberally recognized in the future.

NUMEROUS FOG SIGNALS.

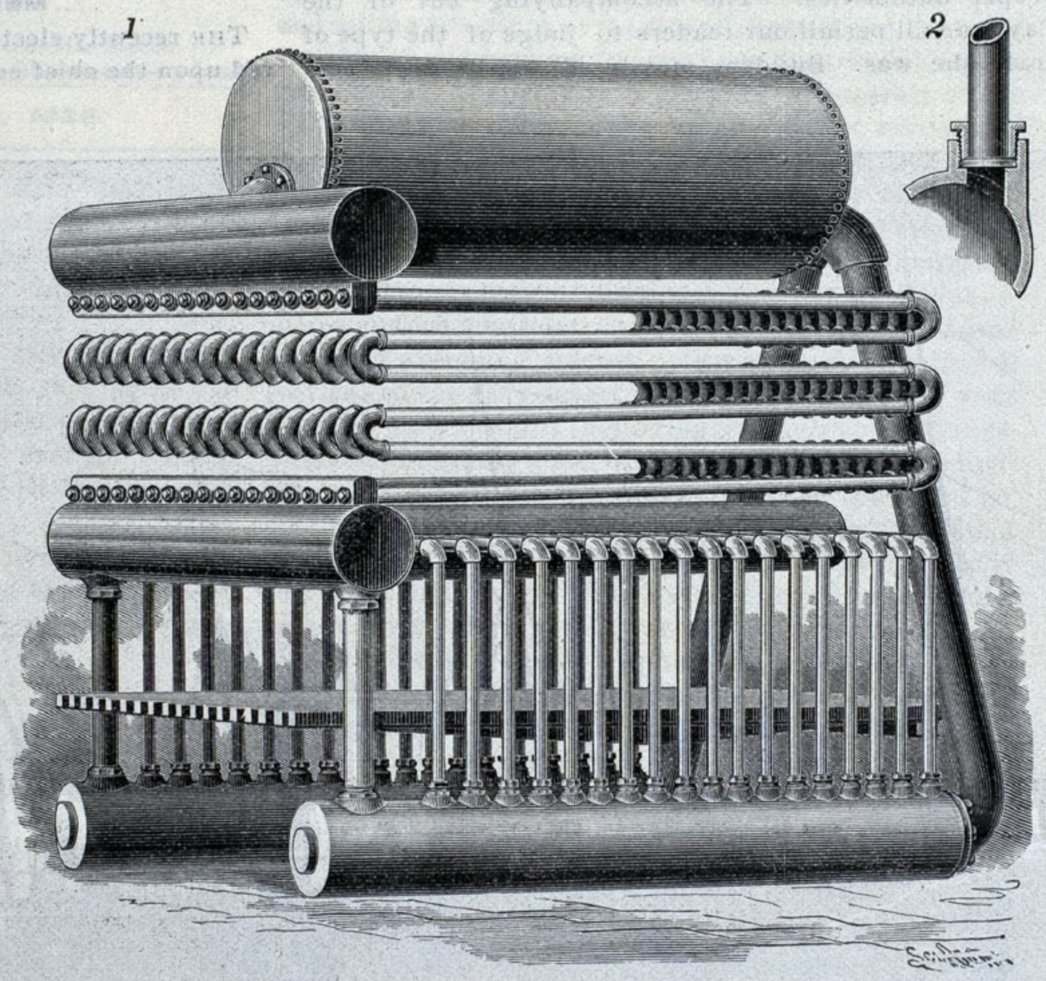
In the April issue of the Nautical Magazine, London, the experience of the Cunard steamer Aurania during the fog in the Irish channel is quoted. In this instance her master could distinguish 17 different fog signals, thereby affording an object lesson of what this would have meant if the sound signals recommended by the International Marine Conference had been adopted and 17 steam whistles had been blowing calliope-like telling exactly what the steamers were doing and what they were not doing.

The St. Clair and Erie Ship Canal Co. will apply for an act to amend the act of incorporation of the company by increasing its power to issue bonds from $5,000,000 to $8,000,000 and for other purposes.

A PATENT MARINE BOILER.

(ILLUSTRATED.)

The Hedges water tube boiler is the latest coil steam generator to be placed upon the market. The points of superiority, which the patentee, S. P. Hedges, of Greenport, Long Island, N. Y., are: The boiler has two mud drums, into which the vertical sections of the fire box tubes are tapped, horizontal sections forming the crown of the fire box, and being tapped into a fire box header, which connects with a cross drum. On each end of the cross drum is a pipe connecting with the mud drums. This pipe is to supply the heating section farthest away from the center, where supply enters from fire box drum. The small figure represents the manner of connecting the heating sections to the cross drums. The flanged end on the tube enters the socket formed in the header and seats on an asbestos ring. The sleeve on pipe is screwed into the boss on the flanged end of tube, thus making a tight, strong joint. This connection at top and bottom of each section makes it easy to remove and replace any section that may require repairs and take it out into the fire room through the front connecting doors without disturbing any part of the casing, or a washer may be put in the opening and the collar screwed down while repairs are being made, without affecting the operation of the boiler. Feed water heaters are placed on the top of heating section (not shown in cut) of such size as to allow the feed water to enter the boiler at the boiling point. These boilers are designed for 200 pounds steam pressure.



HEDGES PATENT WATER-TUBE MARINE BOILER.

One very important matter in connection with the Hedges boiler is its construction, which enables each tube to be clean of scale or soft accumulation on its headers inside. The patented design shows heading instead of return bend. The accumulation of scale can be removed from the inside of the heating tubes, each block having a removable cap or plug opposite the end of each tube, whereby the inside of same can be cleaned of all scale.

WIRE ROPE.

Wire rope has been steadily making its way into new and varied forms of service since its entering the field as a competitor of hemp and manilla. In many of these new uses, it has demonstrated its special merits and superiority. The rigidity that in the earlier stages of its manufacture was a serious obstacle to its more general use, has been overcome by the progress made in the making of iron and steel, resulting in a flexibility making it easier to handle and more directly applicable where such a quality is necessary. The substitution of steel for iron has largely helped to bring about the desired results, which with new methods of grouping the wires has secured the necessary association of strength and flexibility. In the rigging equipment of ships and in hawsers used for towing purposes, the wire rope is to be found in the naval and merchant marine of all nations. This in itself has developed an enormous industry that bids fair to keep itself in permanent activity, and to increase rather than diminish. A large amount of steel wire rope is now manufactured and the product is seemingly destined to enlarge its demand as its advantages become more widely known.

FEED WATER HEATERS.

The Feed Water Heaters Manufacturers' Association has sent out invitations to every manufacturer of this specialty to join their association. The method of rating feed water heaters has been recently discussed by the American Society of Mechanical Engineers and the need for a change in existing methods is perfectly evident to any one who has taken the trouble to give the matter even a slight investigation.

The term horse-power, as applied to feed water heaters, is an exceedingly loose and indefinite phrase. The work which a feed water heater has to do depends upon the number of pounds of water in the shape of steam that an engine requires per hour.

A simple engine, of the cheapest grade, may use say 50 lbs. of water per horse-power per hour; an average engine will use perhaps 30 lbs. of water, while a high-grade engine will cut the consumption of water down to something like 15 lbs. per horse-power per hour. Again, the steam which is used to heat this water will in the case of a simple engine have a temperature of 212°, while in the engines of high-grade, it may have to do its work with a temperature of less than 150°. It is evident, therefore, that the term horse-power cannot be applied to heaters without some explanation as to what is meant by the term, in each particular case.

The Manufacturer's Association have therefore resolved that the only proper rating for feed water heaters is one which is based upon the square feet of heating surface contained in the heater, and that for the future they will in every case in which they are called upon to make prices upon heaters, state the exact number of square feet of surface which they offer.

The signatures to this agreement are the Taunton Locomotive Manufacturing Co., makers of the Wainwright feed water heater; Benj. F. Kelley & Son, makers of the Berryman feed water heater; Wm. Baragwanath & Son, makers of the Baragwanath feed water heaters; The Goubert Manufacturing Co., makers of the Goubert feed water heater; The National Pipe Bending Co., makers of the National feed water heater; Robt. Wetherill & Co., makers of the Wetherill feed water heater; Keystone Engine & Machine Works, makers of the Keystone feed water heater. Mr. Frank A. Thayer, 14 Church street, New York, is the secretary of the association and he will furnish any particulars to manufacturers desiring to identify themselves with the association.

AN AMPHIBIOUS PLANT.

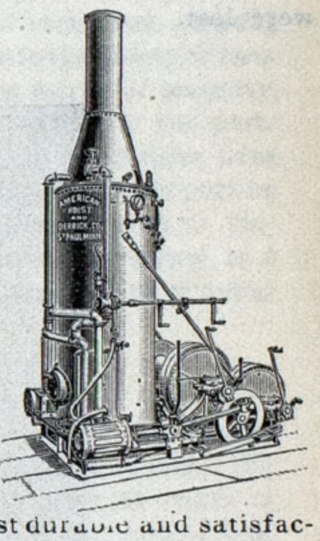
An assisted immigrant, so to speak, is making a lot of trouble in Louisiana through a plant, a water-hyacinth, which a man from New Orleans saw and admired about three years ago while on a visit to Colombia. He brought some bulbs of it home with him and grew them in tubs in his front yard. In about two years patches of the flower appeared in the Bayou St. John, which connects New Orleans with Lake Pontchartrain. In another year the bayou was full of it, so that navigation was impeded. Now, all the canals near New Orleans are overrun and covered up with this invading flower; great masses of it are floating in the lake; rivers running into the lake are choked with it, and it has travelled a hundred miles to the westward of New Orleans. It grows enormously, spreads like rabbits in Australia, chokes all the bayous and streams it gets into, and is a tremendous nuisance, the limitations of which are not in sight. In Colombia it is a harmless, flowering plant that grows in tubs, but in Lousiana the conditions suit it, and have developed it into the most flourishing and obstinate pest the state has known since she lost the Louisiana Lottery.

HOISTING ENGINES.

(ILLUSTRATED.)

The American Hoist & Derrick Co. of St. Paul, Chicago, Cincinnati and New York are placing on the market a very powerful and compact type of hoisting engines.

As will be seen from a reference to the accompanying cut this type of modern hoisting engine has a vertical boiler, horizontal engines and drums operated with a friction clutch whereby hoisting and lowering is greatly facilitated. It is the custom of the American Hoist & Derrick Co. to thoroughly test every piece of mechanism and the engine complete before it is allowed to leave the works. As an instance of the ease of operation and strength of grip gained from their friction drums, a 7½ ton load hoisted by a single line is lowered from a 12 inch drum with ease and regularity inasmuch as it is a common test at the works to force a cork flush with the glass into the neck of a bottle and not break the glass and this experiment is carried out while lowering weights of from 1 to 7½ tons. The plain flue vertical boiler made extra large, has been found after numerous experiments to be the most durable and satisfactory—certainly the life of a hoisting engine is in the boiler and this is tested up to 200 lbs. with a guaranteed working pressure at all times of 100 lbs.



TRAFFIC AT ST. MARY'S FALLS CANAL.

In an article showing the importance of the St. Mary's Falls Canal traffic, assistant U. S. Engineer L. C. Sabin, of Sault Ste Marie goes into the following statistics:

The total tonnage of the sailing and steam vessels of the merchant marine of the United States in 1893 was 4,825,071, or less than one-half of the freight tonnage passing St. Mary's Falls Canal in that "off" year. The St. Mary's Falls Canal freight in 1894 was equal to the total foreign tonnage entered at all the ports of the United States from foreign countries in 1893. The total tonnage entered from and cleared for foreign countries at the customs district of New York for the fiscal year ending June 30, 1893, was 7,015,030, and the number of vessels was 5,037. Comparing these with the similar quantities for St. Mary's Falls Canal we see that the latter passed 30 per cent more freight and more than twice as many boats. In 1892 there were 1,168,849 freight cars on the railways of the United States. Every car would be required to carry more than ten tons of freight in order to carry the amount passing the canal in 1894. The amount of coal passing the canal in 1893 was more than all the coal exported from the United States in that year. The lumber passing in 1893 was nearly equal to the lumber of domestic production exported. The wheat produced in the United States in 1892 was 515,949,000 bushels. The amount consumed in the United States during the fiscal year ending June 30, 1893, was 324,431,740 bushels, and the amount of domestic wheat exported was 119,912,633 bushels. Thus the wheat (including flour) passing the canal in 1893 was 12 per cent of the production, 20 per cent of the consumption, and 56 per cent of the exportation. Or, in other words, the wheat passing the canal in that year was sufficient to supply bread to all the people in the United States for about two and a half months. Passing to the estimated value of the freight in 1893, it was in excess of the estimated value of the state of Vermont, including real estate and improvements; more than one and three-quarter times the total expenditure of the post office department of the government; more than 90 per cent of the value of the world's production of gold, or of the total value of exports of domestic manufactures from the United States, or of the amount expended for public schools in the United States, or of the amount paid in pensions in that year. If to the value of the freight were added the value of the craft engaged in the transportation, any of the above-mentioned items would be far outstripped.

A MOVEMENT is on foot to have the headquarters of the supervising inspector of hulls for the Minnesota district removed from St. Paul to Duluth. The present supervising inspector is W. R. Tibbles. The change desired can only be made upon the order of the inspector general of steamboats and THE RECORD has often advised the transfer.

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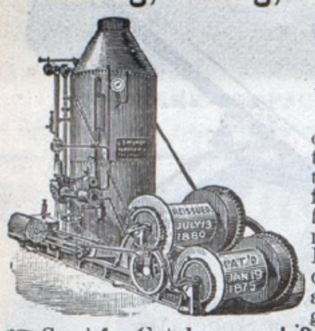

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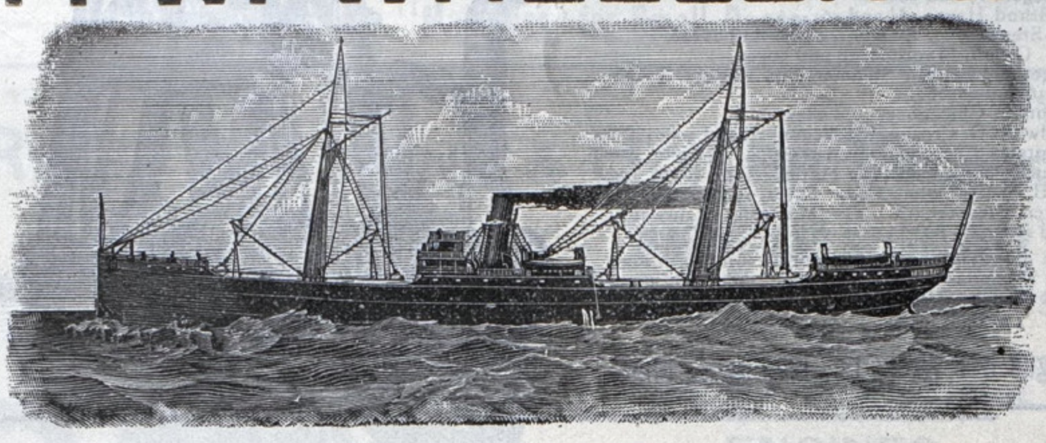

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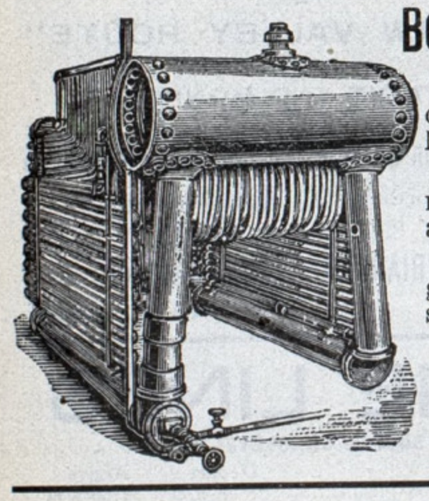

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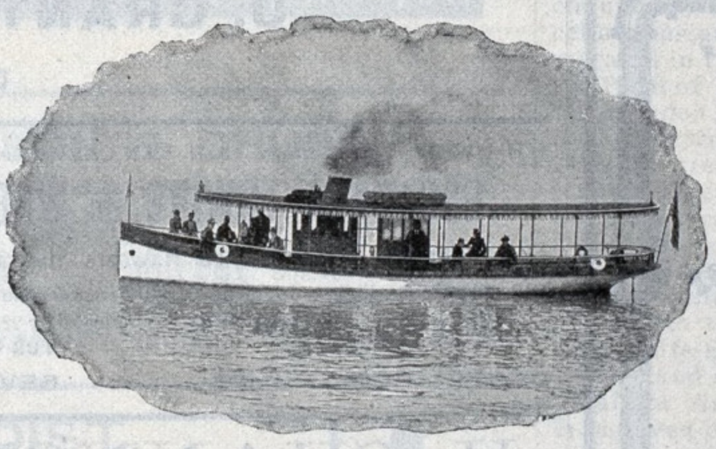

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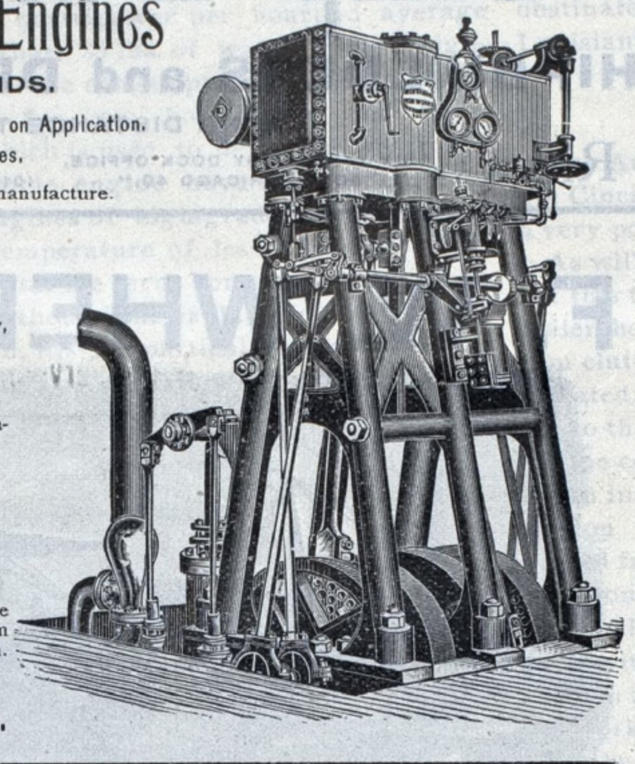

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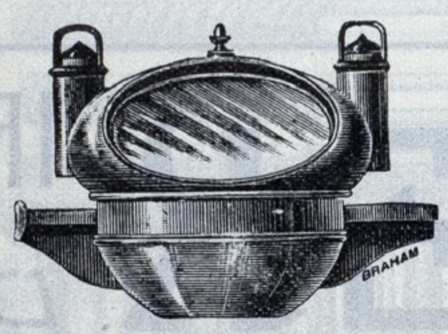

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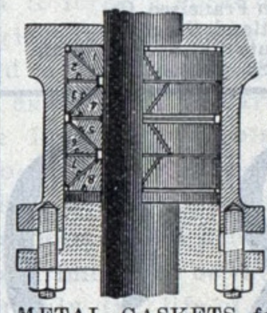

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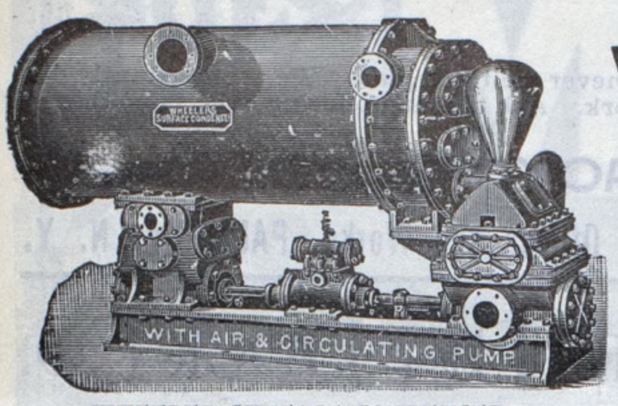

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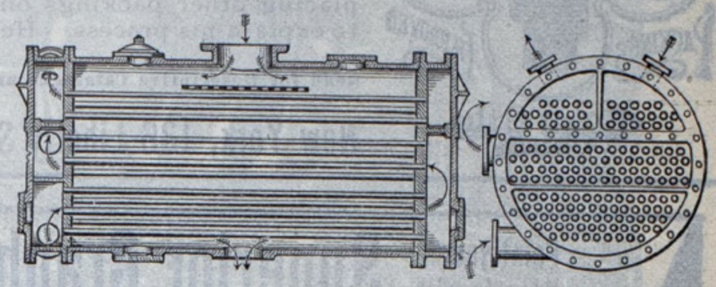

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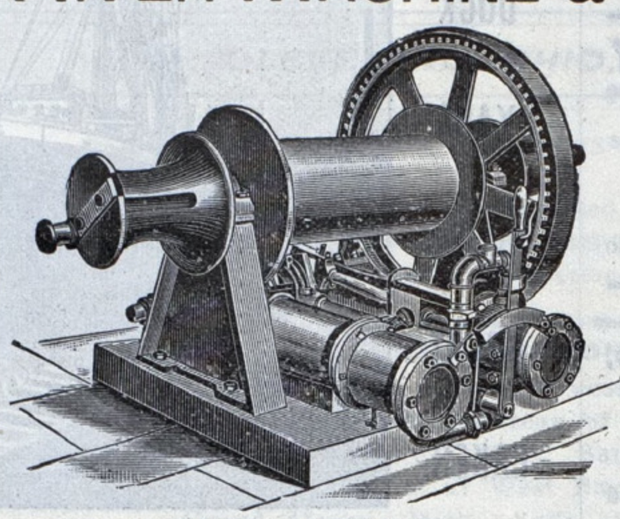

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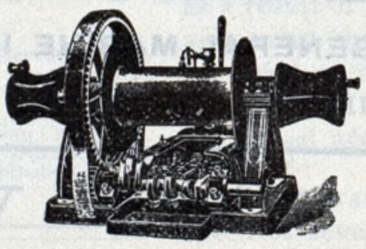

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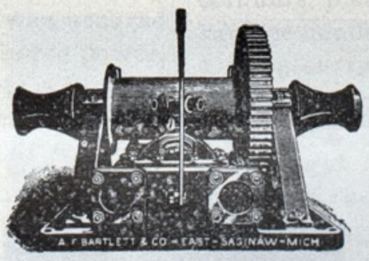

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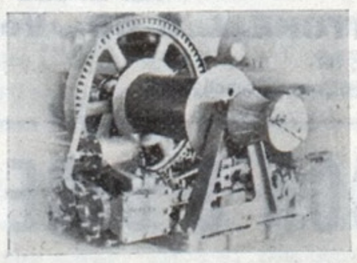

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PROPOSALS.

U. S. ENGINEER OFFICE, 349 Carondelet St., New Orleans, La., May 6, 1895. Sealed proposals for coffer-dam, excavation and piling foundation for lock at Plaquemine, La., will be received here until 12 o'clock noon, June 6, 1895, and then publicly opened. Information furnished on application. JAMES B. QUINN, Major, Engineers. 19-22

U. S. ENGINEER OFFICE, 34 West Congress St., Detroit, Mich., May 8, 1895. Sealed proposals for furnishing all labor, materials and appliances, and removing material from Movable Dam and from 800-ft. Lock Approaches, also for constructing piers for Lock Approaches, will be received here until 2 p. m., June 7, 1895, and then pubiicly opened. All information furnished on application. O. M. POE, Col., Engineers. 19-22

TREASURY DEPARTMENT, OFFICE OF GENERAL SUPERINTENDENT U. S. LIFE-SAVING SERVICE, Washington, D. C., May 4, 1895. Sealed proposals will be received at this office until 2 o'clock p. m. of Friday, the 31st day of May, 1895, for furnishing supplies required for use of the Life-Saving Service for the fiscal year ending June 30, 1896; the supplies to be delivered at such points in New York City, Grand Haven, Mich., and San Francisco, Cal., as may be required, and in the quantities named in the specifications. The supplies needed consist of Beds and Bedding; Blocks and Sheaves; Cordage; Crockery; Furniture; Hardware; Lamps; Lanterns, etc.; Lumber; Medicines, etc.; Paints, Oils, etc.; Shipchandlery; Stoves, etc.; Tools, and Miscellaneous articles; all of which are enumerated in the specifications attached to the form of bid, etc., which may be obtained upon application to this office, or to the Inspector of Life-Saving Stations, 24 State street, New York City; Superintendent Eleventh Life-Saving District, Grand Haven, Mich.; and Superintendent Twelfth Life-Saving District, Appraisers New Building, San Francisco, Cal. Envelopes containing proposals to be addressed to the "General Superintendent U. S. Life-Saving Service, Washington, D. C.," and marked on the outside "Proposal for Annual Supplies." The right is reserved to reject any or all bids, and to waive defects, if deemed for the interests of the Government. S. I. KIMBALL, General Superintendent. 19-21

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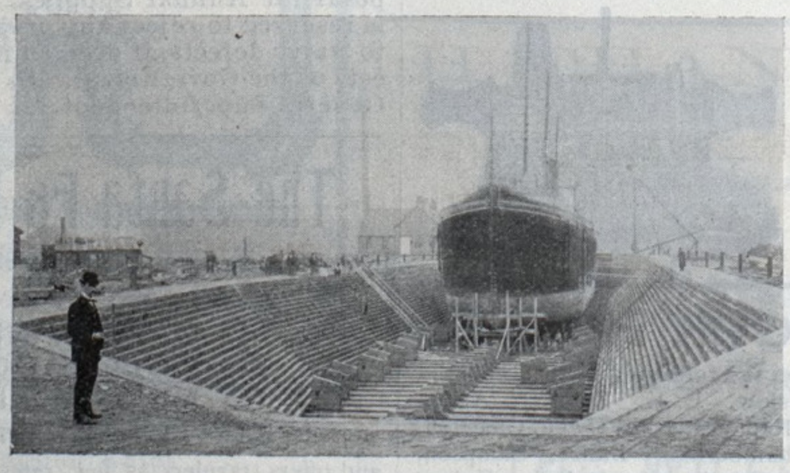

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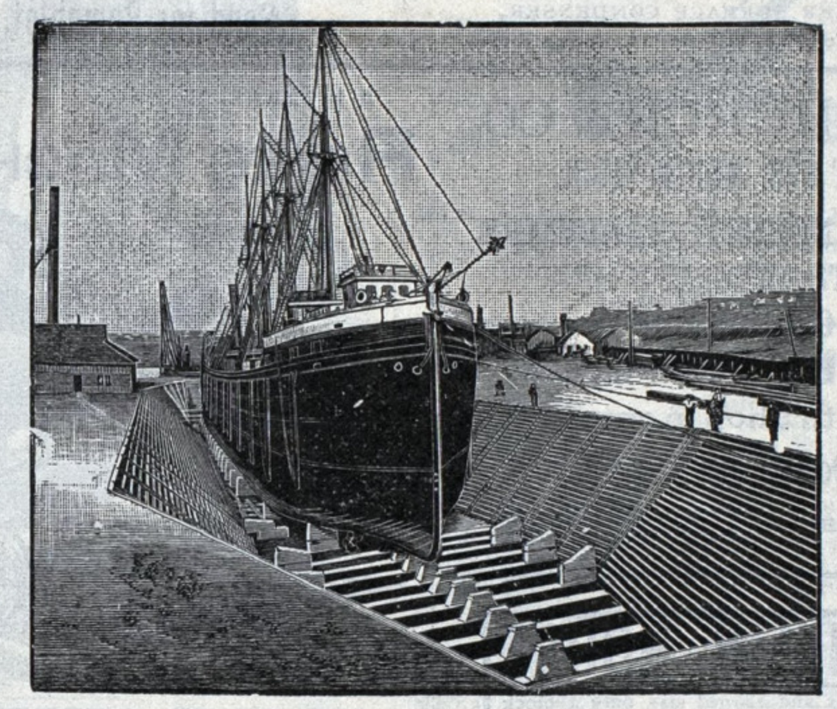

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